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FATTENING BEEF CALVES

LIVESTOCK MARKETS during recent years have experienced a constantly growing demand for well-fattened beef animals weighing from 700 to 1,200 pounds. This has been due to the increasing demand by beef consumers for lightweight, high-grade cuts. Such a demand must necessarily be supplied by well-finished animals from 12 to 20 months old, carrying a large percentage of the blood of one of the early maturing beef breeds, usually that of the Hereford, Aberdeen-Angus, or Shorthorn. To distinguish them from animals of other beef classes, these yearlings are sometimes designated as baby beeves. The preparation for market of this class of beeves requires more skill than is necessary in the production of animals marketed at more mature ages, on account of their tendency to grow rather than to fatten.

This bulletin deals with various phases of the fattening of calves for market. It is a revision of and supersedes Farmers' Bulletin 811, The Production of Baby Beef.

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FATTENING BEEF CALVES

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CONTENTS

MARKETING BEEF CATTLE AT AN EARLIER AGE

THE TENDENCY to finish beef cattle for slaughter at earlier ages in the United States began about 40 years ago. Before that time grass was so plentiful, corn was so cheap, and marketing facilities were relatively so undeveloped that beef steers were kept on the range until they were from 4 to 5 years old, and then were finished on corn. Now most of the finished cattle go on the market for slaughter at from 1 to 3 years of age. This change has been made possible by breeding cattle of better quality which mature earlier. Beginning about 1880 many purebred beef cattle were imported, making possible the subsequent great improvement in western range cattle.

Formerly, heavy cattle brought the highest price, but during recent years choice yearlings have sold as well as the best heavy cattle. In fact, the market for them has been more stable than for any other class of cattle. Recent increases in the retail prices of beef have greatly increased the demand for smaller cuts of beef and consequently for cattle finished at an earlier age.

To fatten calves successfully they must be placed on a fattening ration when they are weaned and kept on a full feed until they are ready for marketing.

COMPARING THE FATTENING OF CALVES AND OLDER CATTLE

In a general way the advantages of feeding calves over older cattle are as follows:

The quantity of feed required to make a pound of gain increases as the animal grows older. Calves make from 33 to 55 per cent more gain than mature cattle on the same quantity of feed.

On account of the higher price of beef in recent as compared with former years, the consumer prefers the lighter cuts which a yearling

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carcass furnishes. A cut of proper thickness from a heavy carcass is too expensive for the average consumer.

Fat, open heifers, weighing from 700 to 800 pounds, sell nearly as well as steers. Heavier heifers are discriminated against because they have more internal fat and are not so well covered as steers, and because, being older, the possibility of their being pregnant is greater.

Calves can be carried longer than mature steers when unexpected circumstances arise, such as a bad market, a strike, or an embargo, as they will retain their "bloom" longer after they are ready to market.

It is not always advisable to try to fatten calves, for the following reasons:

Fattening calves requires more attention and skill on the part of the man feeding them than is the case with older cattle.

Calves of slow-maturing type will not fatten rapidly enough to make desirable carcasses as yearlings. Such calves should generally be carried about two years as stockers before they are fattened.

The total feed required to produce a fat 3-year-old steer may be made up of a much larger proportion of roughages than that required to produce a fat yearling. Mature cattle can eat coarser roughages and broken ear corn much better than young cattle.

Mature cattle may be fattened in a much shorter time than calves, as they have only to fatten, while calves grow as well as fatten.

CALVES SUITABLE FOR FATTENING

The wide, deep-bodied, smooth, thick-fleshed, and well-grown calf with short legs and a good quality as indicated by fineness of hair, medium bone, smoothness of flesh, refinement about the head, and a lack of paunchiness is the type best suited for making finished yearlings. Uniformity in size, weight, and color should not be overlooked, because such factors are an advantage in marketing.

Calves to be fattened should not be allowed to lose the fat they have acquired from milk feeding. A calf lacking in early maturing qualities will use most of its feed for growth instead of fattening. Quality and finish are very desirable in fat yearlings. Half-finished yearlings do not usually bring enough on the market to make their production profitable.

All the principal beef breeds of the United States, such as the Shorthorn, Hereford, Aberdeen-Angus, and Galloway, are suitable for producing calves to be fattened as yearlings. The problem of selecting the individual animals after the breed has been chosen is of much greater importance than the selection of the breed itself.

Farmers' Bulletin 612, Breeds of Beef Cattle, discusses the characteristics of the different beef breeds. It may be obtained without charge on application to the Department of Agriculture, Washington, D. C.

HOW TO OBTAIN CALVES FOR FATTENING

The ideal way to obtain calves suitable for fattening is to keep a good herd of grade or purebred beef cows and a good, purebred beef bull and raise them. If the calves are taught to eat grain while they

are being suckled, they can be weaned with only a slight interruption of their growth and a slight loss of milk fat. The slighter this interruption and loss of fat the less feed will be required to put them in the desired condition and the sooner they can be finished for market.

The bull should be an individual of good beef form and an early maturing type, as success in raising and fattening calves will depend to a very large extent on the bull's prepotency in transmitting his desirable characteristics to his calves. The cows should be of uniform breeding and of colors representative of the beef breeds. They should be of good size, weighing at least 900 pounds in medium condition. A very important factor which, like milk production, can not be determined conclusively by looking at a cow, is that of early maturity. A thick, low-set body and fine quality are indications of early maturity. (Figs. 1, 2, and 3.) The cow should give

FIG. 1.—Cows of excellent quality and conformation for raising beef calves. While there is more shade here than necessary, it is very valuable in a pasture

plenty of milk to keep the calf fat and growing until it is about 6 months old. By that age calves can get along fairly well on grain, some meal rich in protein, and hay or pasture, but they will do much better if they have a moderate quantity of milk supplemented by grain and roughage until they are about 8 months old.

If it is not practicable to keep a breeding herd, one may buy weanling calves suitable for fattening. While they may sometimes be procured from the Corn Belt, the Cotton Belt, and the Appalachian region, the principal source of such calves is the western ranges. When calves are purchased, precautions must be taken to see that they are free from disease. If they are shipped by rail, such hardships as long hauls, delays, and lack of good feed and water should be avoided as much as possible. The cars in which they are shipped should be thoroughly cleaned and disinfected before the shipment.

As most calves are dropped in the spring and weaned in the fall, the fall is the best time to get a good selection. One may purchase them at the public stockyards, on the ranches where they are pro-

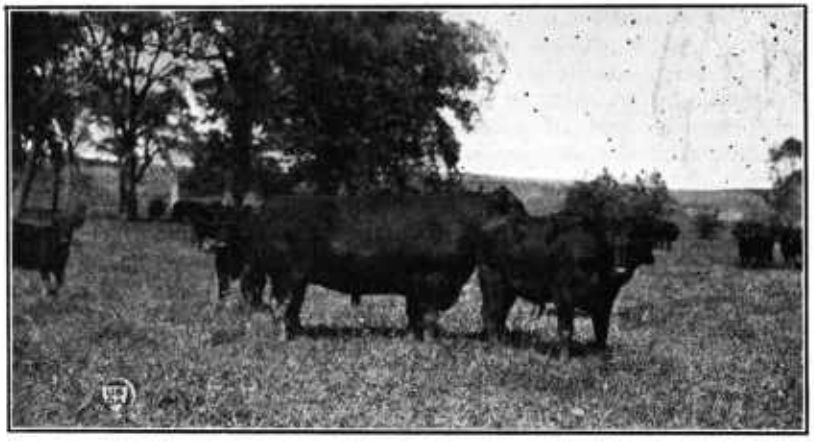

FIG. 2.—An Aberdeen-Angus bull of excellent type for siring early maturing calves. Note the luxuriant growth of grass. A creek running through this pasture furnishes an abundance of fresh water

duced, or at public auction such as have been held recently at central points in the Corn Belt by producers' associations of the Southwest. Such associations are able to furnish uniform lots of calves by pool-

FIG. 3.—A good lot of grade Hereford cows suitable for producing calves which will fatten as yearlings. Note the quality and beefiness of the bull

ing and grading the contributions of their members. Generally the public stockyards offer the largest and most continuous supply of calves conveniently concentrated.

MANAGEMENT OF THE FARM BREEDING HERD

Unless a farmer has some satisfactory method of marketing small lots of cattle, he should keep cows enough to produce at least one carload of fat yearlings. A 36-foot car holds approximately 26 yearlings averaging 1,000 pounds. As the farmer should get at least an 85 per cent calf crop, approximately 32 cows would be necessary to produce a carload of fat yearlings. About 8 more cows, or 40 in all, should be kept to replace the herd every five or six years.

Feeders who have calves enough for two carloads have an advantage in that the animals can be graded, the better ones being placed in one car and the inferior ones in another; or, if the calves do not finish uniformly, one carload may be shipped, while the other one is held until the animals are finished.

As uniformity in size and weight are important factors in producing fat yearlings, it is desirable that all the cows should calve within as short a time as possible. To calve in April the cows should be bred during the latter part of June and up to the latter part of July. If it is desired to have the calves dropped in October, the cows should be bred during the latter part of December or the first part of January. Fall calves are suckled by their dams during the winter and go on pasture at weaning time. After spending the summer on pasture supplemented with grain, they are put into a dry lot for finishing. Spring calves on full feed during the winter should not be turned on pasture in the spring and consequently make little use of grass. On the other hand, greater expenditures for shelter, care, and feed for the cows are required when calves are dropped in the fall. The bulls should be kept separate from the cows until the breeding season arrives. Every effort should then be made to get all the cows in calf during six weeks or two months. Farmers' Bulletins 1395 and 1592 take up the problems of farm and range management of beef breeding herds, respectively.

FEEDING THE CALF FROM BIRTH TO WEANING TIME

Unless the cows in the herd are exceptional milkers, calves intended for fat yearlings should be started on a grain mixture, such as corn and oats, when from 4 to 6 weeks old. Nothing so stimulates growth and early maturity as milk sucked fresh from the dam, but in all cases calves should be fed liberally on grain for at least one month before weaning time.

Every effort should be made to get the calves through the weaning period without loss of their milk fat. (Fig. 4.) The grain ration should be increased so as to permit as little change in their rate of growth and fattening as possible. Some feeders build "creeps" in the pastures or lots so that the calves can get their grain without disturbance from the cows. Creeps consist of small pens with openings which permit only the calves to enter. These openings may have rollers on each side to prevent bruising the calves. The creep should be near the watering place, shade trees, or some other place where the herd spends time enough every day for the calves to learn readily to go in for feed. No more feed should be put in each day than the

calves will clean up. Any feed dampened by rain should be removed before it sours.

Calves from heavy-milking cows should be weaned gradually. If they are running with the cows the weaning should be begun by keeping them up and allowing them to suck only twice each day for five or six days, after which they should be allowed to suck only once a day for a similar period. Then one day's sucking may be omitted, and later two days. Thus the entire weaning takes from 10 to 15 days. The calves of cows giving little milk should be weaned abruptly by separating them as far as practicable.

Fall calves should not be weaned until after the cows and calves are on grass. Spring calves should either be kept on grass after weaning in the fall or be given some succulent feed, such as silage, or winter pasture, such as wheat, oats, rye, or barley, when soil and climatic conditions permit.

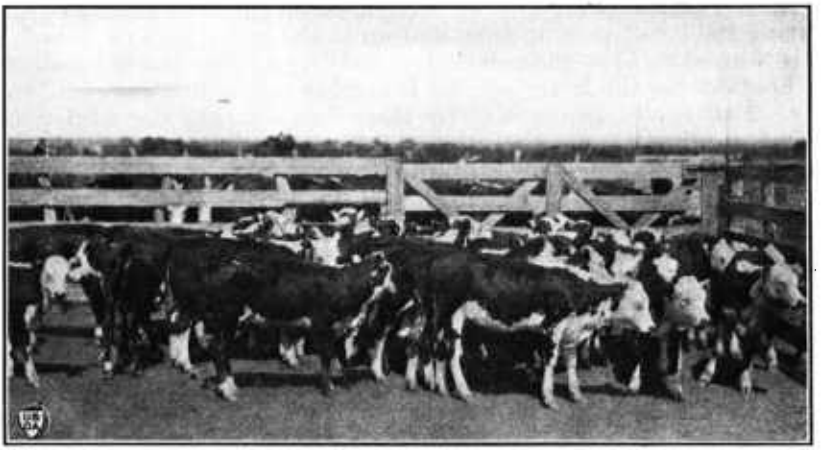

FIG. 4.—Weanling Hereford calves carrying their calf fat, of such good quality and breeding that they will make choice beef, if properly fed and cared for, at about 15 months of age

DEHORNING, CASTRATION, AND VACCINATION

Spring calves should be castrated as soon as convenient, unless there is danger of infestation by flies. Dehorning should be done in the fall after danger of screw-worm infestation has passed. During fly time, pine tar applied on the wounds is one of the best preventives of infestation with screw worms or maggots. Calves raised under farm conditions may be successfully dehorned by the application of caustic potash before they reach the age of 10 days. Detailed information on dehorning and castrating is given in Farmers' Bulletin No. 949.

In localities where blackleg is prevalent all calves should be vaccinated. If the powder vaccine is used, they should be revaccinated before the next blackleg season. Aggressin and filtrate apparently give the longest immunity, which may last for 18 months or longer. Vaccination against hemorrhagic septicemia is advisable, especially when the calves have been shipped through public stockyards.

EQUIPMENT AND SHELTER

To fatten calves an expensive outlay is not necessary. A small, well-fenced lot, a shed open on the south with a good roof, feed troughs or bunks, hayracks, and a trough or tank for water are practically all that is required. Twenty square feet of floor space per calf is adequate for shelter, while two or three times as much lot space is usually allowed. If the lot is likely to become very muddy it should be paved or roofed over unless an abundance of bedding can be put down cheaply to keep the calves dry and clean and to save liquid manure. They should have a dry bed at night. They need protection against cold winds and snow in the North and cold rains in the South. Figure 5 shows good equipment for feeding calves.

Farmers' Bulletin 1350 illustrates plans for a cattle-feeding shed.

FEEDING THE CALF FROM WEANING TIME TO MARKET

Calves that are born in the spring are fed and managed differently from those dropped in the fall. To aid the feeder in handling calves under these different conditions Table 1 is given.

TABLE 1.—*A schedule of management and feeding for finishing spring and fall calves at 15 months of age*

Spring calves			Fall calves		
Monthly	Management	Feeding [1]	Month	Management	Feeding [1]
March	Dropped [2]	Suckle dam.	October	Born [2] on pasture.	Suckle dam.
April	Castrate	Teach to eat grain.	November	Castrate	Teach to eat grain and hay.
May	On pasture	Shelled corn ½.	December	Dry lot	Corn ½; oats ½; hay ½.
June	do	Shelled corn 1.	January	do	Corn 1; oats ½; hay 1.
July	do	Shelled corn 2.	February	do	Corn 2; oats ½; hay 1½.
August	do	Shelled corn 3.	March	do	Corn 3; oats ½; hay 2.
September	do	Shelled corn 4.	April	do	Corn 4; oats ½; hay 3.
October	Wean	Shelled corn 5.	May	On pasture	Corn 5.
November	Dry lot	Shelled corn 6. Protein meal [3] 1. Silage 8. Clover hay 3.	June	Wean	Corn 6.
			July	do	Corn 7.
			August	do	Corn 8.
			September	do	Corn 9.
December	do	Shelled corn 7. Protein meal 1¼. Silage 10. Clover hay 3.	October	Dry lot	Corn 10. Protein meal [3] 2. Silage 10. Clover hay 3.
January	do	Shelled corn 8. Protein meal 1½. Silage 12. Clover hay 3.	November	do	Corn 12. Protein meal 2¼. Silage 9. Clover hay 2.
February	do	Shelled corn 9. Protein meal 1¾. Silage 10. Clover hay 3.	December	do	Corn 15. Protein meal 2½. Silage 8. Clover hay 2.
March	do	Shelled corn 10. Protein meal 2. Silage 9. Clover hay 3.			
April	do	Shelled corn 12. Protein meal 2¼. Silage 9. Clover hay 2.			
May	do	Shelled corn 14. Protein meal 2½. Silage 8. Clover hay 2.			

[1] The rations indicated are in pounds of feed per calf per day. It is not expected that the calves will eat exactly these quantities of feed in these exact proportions.

[2] Dehorn within 10 days with caustic potash.

[3] Protein meal may be linseed meal, soy-bean meal, cottonseed meal, or similar meals rich in protein.

The rations indicated in the table consist of corn, protein meal, silage, and clover hay. Other feeds may be substituted. Barley, milo, kafir, and similar grains may be used in the place of the corn, but slightly larger quantities should be fed. Alfalfa or other

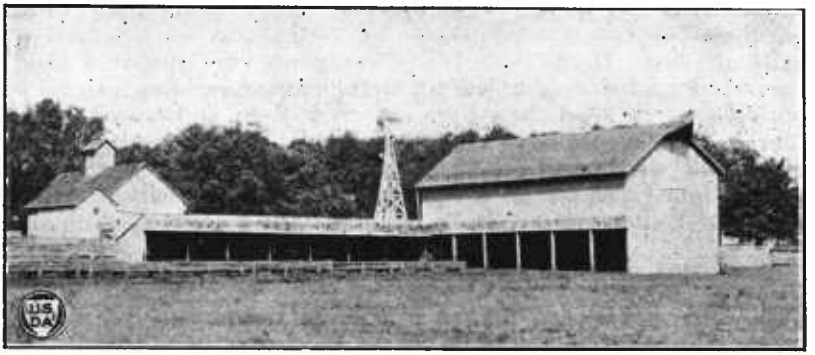

FIG. 5.—A good barn for feeding calves, with a large mow, an open shed, and bunks in the open for feeding grain. The hay is fed under cover

legume hays may be used in place of clover hay. Other silages or root crops may be used instead of corn silage.

When available, oat straw should be kept before the calves on account of its slightly laxative and alterative effect. It has been found at experiment stations that rations consisting of a grain, some kind of protein meal, a succulent feed, and a legume hay generally

FIG. 6.—Shorthorn yearlings being finished on corn, linseed meal, and clover hay. Hogs following cattle fed such a ration make desirable gains

produce the best results. Some feeders, however, finish calves on simpler rations. A ration of corn and alfalfa hay gives very good results. A lot of yearlings being finished on corn, protein meal, and clover hay is shown in Figure 6.

Average daily rations, per 1,000 pounds live weight, suitable for the last six months of the feeding period are as follows:

1	Pounds
Corn, shelled	17
Cottonseed meal	2
Clover hay	6
Corn silage	14

2	
Corn, shelled	12
Oats, whole	5
Linseed meal	2
Alfalfa hay	8

3	
Corn, shelled	16
Linseed meal	2
Red-clover hay	9

4	
Corn, shelled	15
Alfalfa hay	10
Corn silage	12

5	Pounds
Milo heads, ground	16
Cottonseed meal	3
Kafir or milo silage	27
Sudan-grass hay	2

6	
Cottonseed meal	4
Alfalfa hay	5
Milo silage	57

7	
Corn, shelled	19
Alfalfa hay	9

8	
Corn, cob, and husk, ground	14
Cottonseed meal	2
Sorgo hay	9
Alfalfa hay	6

These rations are average for the main feeding period. A small quantity of grain is fed at the start, and the quantity is very gradually increased throughout the entire feeding period. Corn may be increased each month at the rate of about 1 pound or more daily if the calves will take it. Cottonseed meal or linseed meal may be increased from one-fourth of a pound a day to 2 pounds during the first six or eight weeks. If silage is fed, the calves should have all of it that they will eat, during the first month. After that silage and other roughages are held down while the calves are given all the concentrates they will clean up.

MANAGEMENT OF CALVES ON PASTURE

Good pasture may replace the roughage in the calves' ration. As a rule the calves should have all the grain they will eat while on pasture. It is seldom advisable to carry them through the entire finishing period on grass, as a better finish is obtained when they are dry fed during the latter portion of the period. While it is never advisable to change cattle from dry lot to pasture when they are on full feed, it is safe to change from pasture to dry-lot feeding.

When the pasture is very good, calves may not consume grain enough for the best results. In such cases it may be better to keep them off the grass a part of each day. In sections where winter pastures can be grown, the feeder should make use of such pastures, as they furnish roughage economically and make the calves more thrifty.

HOGS FOLLOWING CALVES

Hogs should always follow calves to utilize grain wasted from the bunks and the undigested grain in the droppings. From 1 to 2 pounds of pork should be obtained from each bushel of shelled corn fed to calves. Thrifty shotes weighing from 40 to 70 pounds are

best for this purpose. Heavy hogs, when fat, are not active enough, and small pigs are unsatisfactory because they are likely to be injured by the calves.

The number of shotes to be used depends on the kind and quantity of grain fed and whether it is ground or fed whole. Ordinarily there should be one shote for every two calves. Some grain in addition to that obtained from the droppings may be fed in order to finish the hogs in from 90 to 100 days, so that another lot of shotes can be put in and finished by the time the calves are ready to be marketed. Some feeders prefer to take out the shotes when they are ready to fatten and put in with the calves a new bunch of feeder pigs. When extra grain is fed to the hogs it should be given before the calves are fed. Separate watering facilities, sleeping quarters, and feed yard should be provided for the hogs.

MARKETING

During the last two or three days of feeding, laxative feeds, such as alfalfa, linseed meal, and succulent feeds, should be gradually replaced by oats and grass hay or similar dry and nonlaxative feeds. The calves should be handled as quietly and carefully as possible in moving them to market. The car should be bedded with either sand or dry bedding enough to prevent slipping. Either too few or too many in a car may result in losses. Freight rates generally apply to a minimum weight per car; that is, the amount charged for freight is the same, even though the car contains less than the minimum weight. If the car is loaded above its scheduled minimum weight, however, freight charges are levied on the excess weight.

Table 2 shows the approximate number of cattle and calves which can be shipped in cars of different lengths.

TABLE 2.—*Approximate number of cattle and calves that can be shipped in railroad cars of various lengths*

Approximate weight of animals	36-foot car	38-foot car	40-foot car
400 pounds	50	52	55
600 pounds	40	42	45
800 pounds	30	32	34
1,000 pounds	26	27	28
1,200 pounds	20	22	23

In many States there are county or community livestock-shipping associations, which are a considerable advantage to the shipper with less than a carload.

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